Accessory Apartment – Technical Design Guide

An Accessory Apartment is defined by the UDO to be a separate and complete dwelling unit that is contained on the same lot as the structure of a single-family dwelling or business.
Prior to constructing or creating an accessory apartment on your property you must obtain the necessary permits (i.e. zoning, building, electrical, mechanical, plumbing, etc.), required by code.
The purpose of the guide is to assist contractors, builders, and developers with the design and construction of Accessory Apartments. Click on the topic of interest to go directly to that section or simply browse through the document.

TOPICS:

PLANNING & ZONING ISSUES:

1. UNIFIED DEVELOPMENT CODE (UDO):

Accessory apartments are permissible in the Office, Office II, Office/Business, Community Business I, Community Business II, Institutional, Highway Business, Regional Business, Central Business and Commercial Industrial Districts, as permitted uses. Additionally, accessory apartments are permissible in all residential districts as "Uses by right, subject to special requirements". Below are the special requirements that must be complied with in order to construct or create an accessory apartment in a residential district:

a. Accessory apartments shall be located only on lots containing one single-family detached structure and conforming accessory structures.
b. Only one accessory apartment shall be permitted per single-family detached dwelling.
c. Accessory apartments shall not be considered as additional dwelling units for the purpose of determining minimum lot size or maximum density.
d. The gross floor area of the accessory apartment shall not exceed 500 square feet or one-fourth of the gross floor area of the principal single-family dwelling, whichever is greater; in no case shall the gross floor area of the accessory apartment exceed 50% of the gross floor area of the principal residential structure.

For Planning and Zoning questions regarding Accessory Apartments contact the Department of Planning and Development at 259-5830.

N. C. STATE BUILDING CODE:

1. BUILDING CODE ISSUES:

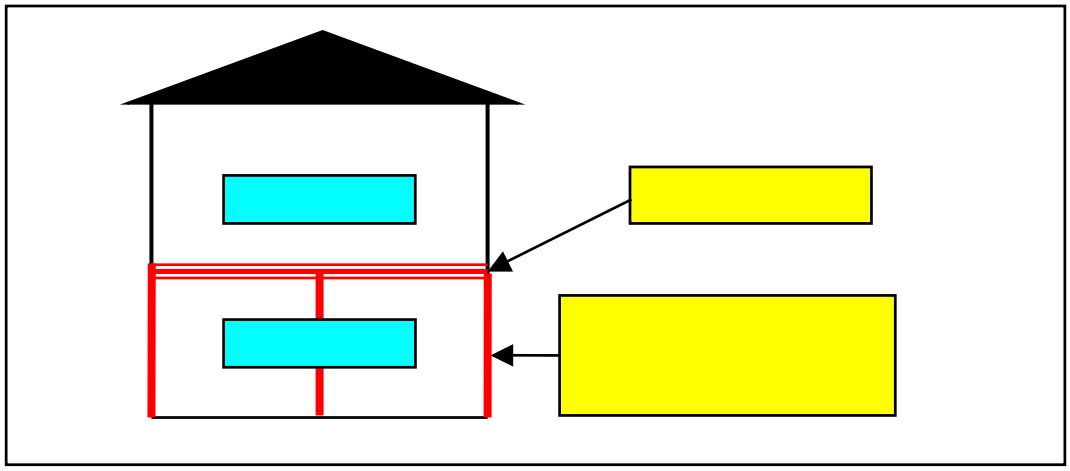
A. Two-Family Dwelling (Definition): The *North Carolina Residential Code for One and Two-Family Dwellings*(a.k.a. *2002 NC Residential Code*), applies to the construction and alteration of one- and two-family dwellings. The primary residence and the accessory apartment associated with that residence are each treated as separate dwelling units under the State Building Code. A dwelling unit is a single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation. Therefore, a structure containing a primary residence and an accessory apartment is treated as a two-family dwelling with respect to the NC State Building Code.

B. N.C. Licensed General Contractor: A licensed general contractor is required by N.C. General Statutes for construction or renovation projects, where the total cost of the undertaking is $30,000 or more. There is an exception for single-family dwellings when a homeowner chooses to perform as the general contractor for the construction of a single-family dwelling on land owned by that person and where the home will be occupied by the person or their family for a minimum of 12 months after completion. This exception does not apply to two-family dwellings. If the construction or renovation to create a two-family dwelling is $30,000 or more, then a licensed general contractor is required. It may be feasible to renovate an existing space within an existing single family dwelling to create an additional dwelling unit in the form of an accessory apartment for under $30,000. In all cases, cost information needs to be

provided with the Building Permit application. If the cost evaluation provided on a permit application appears to be unreasonably low, itemized cost analysis may be requested by the Building Safety Department. For more information regarding the regulations for NC licensed general contractors, contact the North Carolina Licensing Board for General Contractors at **nclbgc.org** or (919)571-4183.

C. 1-Hour Fire Resistant Separation: The dwelling units in two-family dwellings shall be separated from each other by wall and/or floor assemblies of not less than 1-hour fire-resistive rating when tested in accordance with ASTM E 119. The fire-resistance-rated floor-ceiling and interior wall assemblies shall extend to and be tight against the exterior wall, and wall assemblies shall extend to the underside of the roof sheathing. One common source for approved fire resistive designs is the U.L. Design Directory. Reference the U.L. Online Certifications Directory at **ul.com**. As an alternative, prescriptive fire resistance in compliance with Section 719, or calculated fire resistance per Section 720, of the *2002 NC State Building Code* may be used. In addition to the fire-rating, the sound transmission requirements need to be addressed. Refer to the discussion of Sound Transmission below.

D. Supporting Construction for Fire-Resistant Floor Assemblies: When floor assemblies are required to be fire-resistance-rated, the supporting construction of such assemblies shall have an equal or greater fire-resistive rating. All load-bearing walls, exterior and interior, that hold up the floor/ceiling between lower and upper level units shall have 1-hour fire resistant protection in addition to 1-hour fire separation required for the floor/ceiling assembly. For exterior framed walls, the fire-resistance is required from the interior side only. Typically, a 1-hour fire protection for exterior walls may be obtained by applying one layer of 5/8" Type "X" gypsum board to the interior side of the wall. Interior load-bearing partitions shall have the rated gypsum board on both sides of the wall. 1-hour protected walls that do not form tenant or occupancy separation may have unprotected openings and need not comply with sound transmission standards. The main concern for supporting construction is to protect the structural components with 1-hour fire resistance.

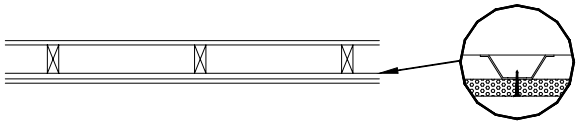


E. 1-Hour Fire Rated Wall: A common design for a 1-hour rated wall is constructed of 2x4 stud framing spaced 16" on center, with one layer of 5/8" type "X", fire-rated gypsum board applied to each side of the wall. Although this design provides the mandatory fire rating, it does not address the sound transmission requirements. Refer to the discussion of Sound Transmission below.

F. 1-Hour Fire Rated Floor/Ceiling: A common design for a 1-hour rated floor/ceiling is constructed of 2x10 floor joists, with one layer of 5/8" type "X" fire-rated gypsum board applied to the bottom of the joist. For floor systems constructed of wood joists smaller than 2x10s, an approved method of achieving a one-hour rating is to apply two layers of ½" Type "X" fire-rated gypsum board to the bottom of the joists. The floor finish and subflooring shall provide a minimum of 15 minute fire resistance. Subflooring may be 1-inch nominal tongue-and-groove boards or 15/32 wood structural panels. Finish flooring may be 1-inch nominal tongue-and-groove finish flooring or 19/32 wood structural panel finish flooring or a layer of Type I, Grade M-1 particleboard not less than 5/8-inch thick. Although this design provides the mandatory fire rating, it does not address the sound transmission requirements. Refer to the discussion of Sound Transmission below.

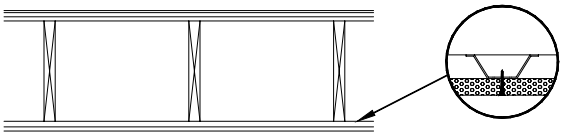
G. Sound Transmission Requirements: Wall and floor/ceiling assemblies separating dwelling units shall provide airborne sound insulation for walls, and both airborne and impact sound insulation for floor/ceiling assemblies. Airborne sound insulation for wall and floor/ceiling assemblies shall meet a **Sound Transmission Class** (STC) rating of 45 when tested in accordance with ASTM E90. Floor/ceiling assemblies between dwelling units or between a dwelling unit and a public or service area within a structure shall have an **Impact Insulation Class** (IIC) rating of not less than 45 when tested in accordance with ASTM E 492. Listed below are examples of approved designs:

i. 1-hour Wall with STC Rating = 50:



5/8" Fire-rated gypsum wallboard, screw applied to resilient metal furring channels spaced 24" o.c. one side only on 2x4 studs spaced 16" o.c. Other side 5/8" Fire-rated gypsum board nailed direct to studs.

ii. 1-hour Floor/Ceiling with STC Rating =45; IIC Rating = 63:



½" Fire-rated gypsum wallboard attached to resilient metal furring channels spaced 24" o.c. on 2x10 wood joists 16" o.c. Wallboard secured to channel with 1" self-drilling screws 12" o.c. Carpet & pad on top of flooring for IIC rating of 63.

H. Penetrations of Fire-Resistive Assemblies: Penetrations may consist of plumbing pipes, HVAC ductwork, electrical boxes, etc., which breach the membrane of a 1-hour fire resistive assembly. Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814. It is prudent to limit the number of penetrations into a fire-

resistive assembly wherever it is feasible to do so. Typically, there are less penetrations when the dwelling units are side-by-side, than when the dwelling units are vertically stacked.

I. Common Area(s): The fire-resistive separation line between the two dwelling units needs to be clearly defined in the design. An envelope of fire protection shall form a continuous enclosure around the dwelling unit that terminates at an exterior wall, roof deck, or intersection at another rated assembly. Sometimes there are areas within a structure that are separate from both tenant spaces, such as a common laundry room, common utility room, or interior corridor. Common areas shall be separated from both of the dwelling units by 1-hour fire-resistive construction.

J. Fireblocking: Fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between the top story and the roof space. See Section R602.8 of the *2002 NC Residential Code* for approved fireblocking materials and locations where fireblocking is required. The areas where inspectors see the most fireblocking infractions are at dropped ceilings, soffits, and cove ceilings; as wells as between basement foundation walls and adjacent framed walls.

K. Ceiling Height: Habitable rooms, hallways, corridors, bathrooms, toilet rooms, laundry rooms and basements shall have a ceiling height of not less than 7 feet. The required height shall be measured from the finish floor to the lowest projection from the ceiling. When considering the remodel of a existing basement to an accessory apartment, the ceiling height requirement is very important.

L. Basement and Bedroom Emergency Egress Windows/Doors: Basements with habitable space and every sleeping room shall have at least one openable window or exterior door approved for emergency egress or rescue. The units must be operable from the inside to a full clear opening without the use of a key or tool. Where windows are provided as a means of emergency egress or rescue, they shall have a sill height of not more than 44 inches above the floor. Egress window shall have a minimum net clear opening area of 4 s.f., minimum net clear opening height of 22 inches, and minimum net clear opening width of 20 inches. Each egress window from sleeping rooms must have a minimum total glass area of not less than 5.0 s.f. in the case of a ground window and not less than 5.7 s.f. in the case of a second story window. Escape and rescue window openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2, *2002 NC Residential Code*. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3, *2002 NC Residential Code*.

M. Premise Identification (Address Labels): Approved numbers or addresses shall be provided in such a position as to be plainly visible and legible from the street or road fronting the property. These numbers should contrast with their background and be Arabic numerals or alphabet letters. The minimum size for address numbers is 4 inches high with a minimum stroke width of 0.5 inch. Each dwelling unit within a multiple dwelling building shall be labeled with an address specific to that dwelling unit. (e.g., 100-A, 100-B, etc.)

For Building Code questions regarding Accessory Apartments contact the Ed Stoll at 259-5667, or send email to EdwardS@mail.ci.asheville.nc.us.

2. **ELECTRICAL CODE ISSUES**:

A. Licensed Electrical Contractor: All electrical work shall be done by an electrical contractor, licensed in North Carolina. The general contractor should advise the electrical contractor of the location of any fire-rated walls and floor/ceiling assemblies.

B. Separate Metering of Electrical Utilities: According to North Carolina General Statutes, a master meter is prohibited on multi-family dwellings. Each dwelling unit shall have separate metering of their electrical usage. Meters are required to be grouped together. One building shall have only one service drop. Generally, the electrical panels are remotely located within the structure and the feeders to these panels have to run within the building framing. In such cases, fuse protection is required for the feeders and a main electrical disconnect shall be provided for each feeder. All disconnects shall be grouped in one location.

C. House Meter: Branch circuits in dwelling units shall supply only loads within that dwelling unit or loads associated only with that dwelling unit. Branch circuits required for the purpose of lighting, central alarm, signal, communications, or other needs for public or common areas of a two-family dwelling shall not be supplied from equipment that supplies an individual dwelling unit. Separate metering of electrical usage shall be provided for common use areas.

D. Overcurrent Devices (breakers and fuses): Each tenant space or dwelling unit shall an electrical panel that is readily accessible. The panel box serving one tenant may not be located within another tenant's space. All the circuitry located with a tenant space shall be protected by overcurrent devices located within that tenant's electrical panel. Usually, the panel for a particular dwelling unit is located within that dwelling unit. Sometimes the panels for both tenants are located within a common utility room that is accessible to both tenants.

E. Electrical Penetrations in Fire-Rated Assemblies:

i. Electrical Boxes in Fire-Rated Ceilings: One metal electrical box not exceeding 16 square inches in area is permitted for light fixtures in each 90 sq. ft. of ceiling area. Nonmetallic electrical boxes are permitted provided such boxes are listed for use in fire resistant assemblies and are installed in accordance with their listings.

ii. Electrical Boxes in Fire-Rated Walls: Openings not exceeding 16 square inches are permitted provided the total area of such openings does not exceed 100 square inches for any 100 sq. ft. of fire resistant wall area. The wall board must be cut so that the clearance from the electrical box does not exceed 1/8 inch. Outlets on opposite sides of the same wall shall be separated as follows:

a. By a horizontal distance of not less than 24", or
b. By a horizontal distance of not less than the depth of the wall cavity when the wall cavity is filled with cellulose loose-fill or mineral fiber insulation, or
c. By molded fire blocking made of an approved fire-resistive material listed for such applications and installed according to manufacturer's installation instructions.

F. General Wiring Requirements: The electrical wiring shall comply with the N.C. Electrical Code. The number and size of electrical circuits provided within each dwelling unit shall comply with the Electrical Code. All electrical work shall be performed by a N.C. licensed electrical contractor. According to Section 210.12 of the *2002 NC Electrical Code*, branch circuits that supply 125-volt, single-phase, 15- and 20-ampere outlets installed in dwelling unit bedrooms shall be protected by an **arc-fault circuit-interrupter** listed to provide protection of the entire branch circuit. Lighting fixture outlets are included along with plug outlets in the definition of the receptacle outlets that are required to be AFCI-protected in bedrooms.

G. Smoke Detectors: A minimum of one 120-volt permanently connected smoke detector shall be installed in each sleeping room, outside of each separate sleeping area in the immediate vicinity of the bedrooms and on each additional story of the dwelling, including basements and cellars but not including crawl spaces and uninhabitable attics. All detectors shall be interconnected such that the actuation of one alarm will activate all alarms within that individual dwelling unit and shall provide an alarm that will be audible in the sleeping areas. All detectors shall be approved and listed and shall be installed in accordance with manufacturer's instructions. The required smoke detectors shall receive their primary power from the building wiring and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Whenever an addition, alteration or repair to an existing dwelling unit requires a building permit, smoke alarms shall be installed within the existing portion of the dwelling unit in accordance with Article 210.71 of the *2002 N.C. Electrical Code*. If one or more sleeping rooms are added or created, then smoke alarms shall be installed. Where alterations and repairs do not result in the removal of existing interior wall or ceiling finishes, smoke alarms are permitted to be solely battery operated and are not required to be interconnected.

For Electrical Code questions regarding Accessory Apartments contact the Ed Stoll at 259-5667, or send email to EdwardS@mail.ci.asheville.nc.us.

3. **PLUMBING CODE ISSUES**:

A. Licensed Plumbing Contractor: All plumbing work shall be done by a N.C. licensed plumber. The general contractor should advise the pluming contractor of the location of any fire-rated walls and floor/ceiling assemblies.

B. Plumbing Penetrations in Rated Assemblies: Any penetrations in the fire resistive wall for floor/ceiling assembly by plumbing piping shall be protected with an approved firestop system to provide a minimum 1-hour fire resistance. Any PVC or CPVC piping is protected by fire collars or wrap strips which incorporate an intumescent material. In the extreme heat of a fire condition, the intumescent material will expand to fill the hole created when the plastic pipe melts. Metallic pipe penetrations may be firestopped with approved fire-rated caulks, installed with backing and sufficient annular space to accommodate the caulk per an approved firestop design.

C. Metering of Water Service: Unlike electrical and gas utilities, separate metering of water service for each dwelling unit is not required.

For Plumbing Code questions regarding Accessory Apartments contact the Ed Stoll at 259-5667, or send email to mailto:EdwardS@mail.ci.asheville.nc.us.

4. **MECHANICAL CODE ISSUES**:
   A. Licensed Mechanical Contractor: All HVAC work shall be done by a N.C. licensed mechanical contractor. The general contractor should advise the mechanical contractor of the location of any fire-rated walls and floor/ceiling assemblies.

   B. HVAC Penetrations of Fire-Rated Assemblies: Any ductwork installed within fire-resistive walls, or floor/ceilings shall be approved for such installations. Approved fire dampers shall be installed at penetrations of any fire-rated wall assemblies. Approved ceiling dampers shall be installed at penetrations of any rated ceilings.

   C. Return Air – Not Permitted To Be Shared Between Separate Dwelling Units: A single forced air system may not serve two separate dwelling units because return air from one unit would be introduced into the environment of the other unit. Discuss this issue with your mechanical contractor. Often, the larger, primary dwelling unit will have a forced air HVAC system, while the smaller accessory apartment will have an alternate heat system such as electrical baseboard, direct vent gas unit heaters, or central return furnace.

   D. Door Swings and Vented Wall Furnaces: A common design problem occurs when vented wall furnaces are located too close to hinged doors. Per Section 607.4 of the *2002 Fuel Gas Code*, a vented wall furnace shall be located so that a door cannot swing within 12 inches of an air inlet or air outlet of such furnace measured at right angles to the opening. Doorstops or door closers shall not be installed to obtain this clearance.

   E. Gas Meters: According to NC General Statutes, separate metering is required for gas utilities serving each dwelling unit. If both units have gas appliances, then separate meters are required. A gas piping permit is required for any gas piping installation or renovation.

      For Mechanical Code questions regarding Accessory Apartments contact the Ed Stoll at 259-5667, or send email to EdwardS@mail.ci.asheville.nc.us.

HOUSING CODE OF THE CITY OF ASHEVILLE (Ordinance No. 2065):

1. The Housing Division of the Building Safety Department: When an accessory apartment is being created, a Housing Certificate must be obtained after all the certificate of compliance inspections for each trade are complete, and other local laws are complied with, but before occupancy. It is not legal to rent a dwelling that does not have a valid Housing Certificate. Contact the Housing Division in the Asheville Building Safety Department at **259-5764** regarding the proposed dwelling unit. In most cases a cursory inspection by a City Housing Code Official will be required prior to issuance of a Housing Certificate. Housing Certificates for rental units must be renewed every five years. Please contact the Housing Division for further information.